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A  
H I N T  
TO THE  
D Y E R S,  
AND  
CLOTH-MAKERS.

And well worth the Notice of the  
M E R C H A N T.

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By JAMES HAIGH, *K*  
SILK and MUSLIN-DYER, LEEDS.

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Printed for Mess. RIVINGTON and SON; R. BALDWIN;  
and T. CADELL, LONDON.  
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## P R E F A C E.

**T**HE AUTHOR of the DYER'S ASSISTANT thinks it his duty, in gratitude to the professors in that noble Art, to subscribe his hearty thanks for their approbation of, and encouragement given to, that work, in this and every part of England. It is well known, my design is not to teach strangers to dye; but to help the thinking part of dyers to improve; and to shew them how I spend some of my leasure hours to help them, as well as myself, to a most necessary knowledge. It is well known by that body of people, and felt too by some, that the price for dying woollen goods, hath been much reduced of late. Many circumstances

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having



having determined me, long since, to acquire all possible knowledge in the practice of dying : I am therefore constrained once more to recommend a strict inquiry into the original quality of all the drugs they use ; that thereby, if possible, they may discover some of the many hidden advantages, that may justly be expected therefrom.

I am astonished that no artist has ever attempted to improve this most ingenious art, on chemical principles. I began the work in hopes that my master-piece would undertake to improve it ; but in vain do I expect it.

*A Word to the thinking Part of Dyers.*

If you were sensible of the double advantage that might be acquired in the use of many of your vegetable drugs, which must be first grounded on chemical experiments in miniature,  
which



which will be a certain rule to the practice at large. I am certain you would not rest till you had made some improvement.

If after you have been dying with that resenous drug, Saunders, when emptying the vessel you take up a handfull, dry it and digest it in a phial with some pure spirits of wine, and it will afford you an excellent red, water being insufficient to dissolve the resin, and let out the prime part of the colour. Many others may be discovered, if an unwearied attention was paid.

Many will censure and despise this, for no other reason than because they cannot see into it; nor will they be at any pains to learn and improve their talents. They seem rather to choose the old round, like a horse in a mill,

having no spirit or courage to improve, but content with each knowing the other's method, without striving to excel, and discover more complete and less expensive ways of working, and using the drugs to the best advantage.

I know not how men can sit still, when there is more to learn. Let it not be said of you, as of one of old: He lived and died and did nothing; perhaps he worked with his hands, but his head was asleep; and therefore he was an unprofitable servant, and when dead, his memory was no more. Sure it is, the invitation I have to write and publish this small pamphlet, is not so much to please others, or to shew any thing I have is capable of the name of parts, but to communicate my good wishes for improvement to my brethren the dyers, and to shew them  
my

my willingness to help to perfect one of the most useful arts in the world.

I shall leave all to itself, and to every man's just liberty to approve, or disapprove, as he pleases. And however it be, the Author shall not be much troubled, for he is certain no man can have a lighter esteem for him, than he has for himself; who, however, will be best pleased, if any man shall find benefit by what he has wrote. If any should alledge a general acceptation, that, to the Author, will be no prevailing argument; for the multitude, though most in number, are the worst and most partial judges. He does not plead the importunity of friends for the publication of this. If it is worthy, it needs no apology, if not, let it be despised. And I remain the same friend to trade.

JAMES HAIGH.



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of the most afflicted and in the world.

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than he has for himself; who  
however will be satisfied, if any  
man shall find fault with his  
words. He only should be troubled  
and dissatisfied, that to the Author  
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judged.

JAMES 3. 17. 18.

HINT to the DYERS, &c.

**B**LACK being a primitive colour, and one of the most difficult to perfect, deserves a few remarks.

If I ask a dyer what ingredients compose a black, the answer will be this. Logwood, shumac, bark and coperas; and if he knows it, he will add a little ashes and argol, in the last wet. If I ask him which of these drugs contain an acid, which an alkaline, and which a neutral quality, he cannot give me an answer; So you see he knows the effect, but a stranger to the cause, and every thing else separate from fact and custom.

What

What a pity it is that men will not search things to the bottom, when they might be able to find out the cause of miscarriages, for which goods are frequently thrown aside to be dyed other colours, greatly to the dyer's loss. In conversing with a sensible dyer, I simply asked him, what part does logwood act in the black dye? The honest man as simply answered, "It helps to make it Black." No other proof was wanted to know, that he also followed his forefathers in the old round. But the reader by now, thinks it time to be informed of the business of logwood; which is (if used in a right proportion) to soften the goods, and give lustre to the colour. Logwood being possessed of a most excellent astringent quality, fixes itself in the pores of the goods, and gives them a velvet-like feel and gloss.

Some



Some will object to this assertion, and say, But our blacks have not that velvet-like feel and gloss. True, Sir, but don't you know the reason? You dye your blacks without scouring, forgetting, or not knowing, that when the goods enter the boiling dye-liquor, they grow harsh, and the oil contained in them, forms a sort of rosin, which becomes as fixed as if it was pitch or tar. This is one great cause why blacks are so liable to soil, and dirty linen, because the dye is in some sense held in an outside or superficial state. Think then is it possible these goods should finish soft like velvet, or shine like a raven's feather. No, on the contrary, they spoil the press papers, and come out stiff and hard like buckram, (not velvet) and are often three-parts perished in the finishing. No greater cause can be assigned for it, than that of not scouring. This is  
the

the reason of the great difference, so much spoken of, between the London blacks and those dyed at Leeds. If the Leeds dyers would take the same pains as the Londoners do, I think they would excel, in fact, if not in name.

The finishing shops in London are not more than half so well furnished with tools, as those at Leeds are: And therefore let the Leeds dyers be equally tight and clean in their performance, and there is nothing to prevent their superiority. But the master dyers give a very reasonable answer to the foregoing. They say, the price is too low, and they cannot afford to take so much pains. What a pity that the merchants do not consider this! If threepence a piece was added to the price for dying thin goods black, it would about pay for the scouring,  
and

and the goods would be finished with a brilliant lustre, and yet soft like a ruffel.

I should speak a little to the nature and business of the other drugs, which enter the composition of black, had I not done it before, (*see the article black, Dyer's Assistant, p. 150.*)

I am astonished at the ignorance of the poor cloth-makers, many of whom have applied to me frequently for instructions; one of them, on being asked what sort of ware, and how much he used to dye such a colour, shewing him a pattern, He answered, When I have a pattern given me by a merchant, I go to the salter, shew him the order, and he serves me with what is wanted. I conversed with him some time, and would have instructed him, but alas! he had left his capacity at home; and I might as well have read the newspaper to him. What a pity it is, that so

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many



many hundreds of that noble branch of business, work as it were blindfolded, and poverty bitten too, for want of instructions, which they have no spirit to seek; who, when they bring a cloth to the market, are glad to sell it for one and sixpence, or two shillings in the pound profit, when they might as easily gain five or six shillings, if they knew how to use their drugs. But I despair of doing that for them, which nature has left undone. For, without I could teach them to see with a dyer's eye, I might talk and write for ever in vain.

But there is another class of cloth-makers, to whom I will give a useful hint, and have done.

The article sky-blue deserves our notice. This colour is often substituted, (even on fine cloth) by the Saxon-blue, on account of its brilliancy and fine lustre; but, like a fugitive, it only  
 stays

stays for a season. A little experience has taught me, that if a parcel of fine wool be well scoured, then sulphured, or stoved, than which, nothing can make it whiter, and then dyed in a weak vat, it will have all the beauty of the Saxon-blue, without its imperfections. The vat used for this purpose, should be set with a small quantity of indigo, on purpose for light shades, when the shades will be always brighter, than when dyed in an old vat that has been weakened by dying dark colours. But the dyers tell you, that blues bear so low a price, and indigo is so dear, that they cannot afford to set fresh vats for light shades. Here is a sufficient cause; and one very great reason of retarding the perfection of many colours. If the wool before-mentioned, should be obstructed in the milling, by means of the sulphur, (of which I have not had experience.) I would commend the dying of the wool after scouring only,

and stove it after it is milled, which, I think, will answer the same purpose; and the beauty of the colour will amply pay for every superfluous work.

I would recommend to the dyers, after washing the dark blues well at the river, to turn the cloth very quick through a warm vessel of water, in which has been dissolved a little allum, and they will see a surprising change in the lustre from that simple process.

I am not willing to omit any thing worth notice in the course of my experiments. I will, therefore, lightly touch the properties of common water. By a great number of experiments, I am thoroughly convinced, that different waters with the same ingredients strike different colours. I find that the purest and lightest waters, strike the best light colours.



All the dye-houses at a distance from the river in London are furnished with wood cisterns which hold, perhaps, from one to two hundred hogsheds of water; which is supplied from the water works, and is always impure, and frequently muddy, when on standing a considerable time, as is the case at some seasons of the year, it becomes putrid, and emits a feetid smell; if suffered to stand longer, it purifies itself, and becomes sweet and clear, as well as considerably lighter. I have sometimes filled a vessel when the water has been all of a ferment, and stunk almost beyond bearing; which at a boiling-heat was no more felt, by adding a handful of common starch, and a small bit of alum, all the filth is made to rise, and is taken off with a ladle for that purpose. The superior goodness of the water obliges us to ascribe an advantage to the London dyers of

light colours, add to this their remarkable cleanliness. When a vessel is boiling they watch it carefully, and with a mop, kept for that purpose, they rub off the scum all round at the water's edge, so that the liquor is perfectly clear.

A short remark on the dye of Brasil wood.—It is impossible to wear a red, a dove colour, a crimson, purple, light or deep violet, or any other colour, the produce of Brasil-wood, used recently, many weeks, without fading, spotting, or soiling. If these colours were dyed in-grain, they would indeed cost something more, but you have then a colour which will continue beautiful as long as the stuff or cloth will last; and if spotted with dirt or grease, can easily be scoured and cleaned without danger of losing or injuring the colour.

I boiled 50 pounds of Brasil-chips one hour, in a copper of the hardest spring water I could find, and carefully took off the scum, turned this liquor over into a large tub, and re-heated the copper to boil the chips a second time, when the colour was all extracted. I then put both liquors together, and let it stand six months, when it was ropy and thick like oil. Now having prepared a small piece of fine cloth in allum and four bran-water, and kept it moist five days unwashed out of the allum, I boiled one nut-gall and one quart of Brasil liquor ten minutes, then rinsed my piece of cloth, and dyed it a very beautiful marone. But the chief remark I intend to make here, is, that I hung this piece of cloth in the open air night and day during four severe winter months, and it had rather gained in beauty of colour, and was grown rather deeper. This is a sufficient proof

proof



proof that chemistry hath a power of securing the fine particles of those vegetables which are now called bastard drugs. Experiments (which are the best guides in natural philosophy, as well as in arts) plainly shew, that a great advantage might arise in favour of the studious practitioner, who is not wearied if he miss his design after twenty or thirty trials, but still pursues his plan till he has hit it; for nothing of the kind seems to be impossible.

*A few Experimental Observations on the  
Dye of Cochineal.*

After all the common processes of dying with Cochineal, there is found at the bottom of the vessel a deep brown sediment. This sediment appears to consist of the impurities of the tartar, and the grosser parts of the powdered Cochineal. This being lightly washed  
with

with clear cold water, dried, and ground on a marble, with one-fourth its weight of fine tartar, into an impalpable powder, and then put into water, with a little alum; a piece of white cloth, boiled in this liquor three quarters of an hour, acquired a very beautiful crimson dye.

This experiment evinces, that by reducing Cochineal into a powder of moderate fineness, as commonly practised, we do not gain all the advantage which this valuable commodity is capable of yielding.

If the Cochineal when taken from the vessel (after the scarlets are dyed) is treated, as above, the saving in the Cochineal, whether for scarlet or crimson, will be about one-third. Though less tartar is usually employed in the dye-liquor, yet this quantity here directed,

rected does no harm; it appeared on trial, that the colour was rather the more solid for it. All urinous and alkaline liquors or substances stain scarlet to a crimson, by destroying the effect of the acid. Hence, in pure country air, scarlet retains its lustre much longer than in cities and towns, where alkaline and urinous vapours are more abundant. The dirt of roads and sundry substances of the acrid kind, leave no stain on scarlet, if the part be washed immediately in pure water, and wrung in a clean linen cloth. If the dirt is suffered to dry, a blackish violet spot will remain, which can only be discharged by mild vegetable acids, as vinegar, citron juice, a warm dilute solution of cream of tartar, or sour bran-water, if these acids, however, be not applied with a good deal of address, whilst they take out the blackish stain, they leave a yellow one, by dissolving



solving the colouring particles of the  
Cochineal itself.

After at least a thousand experiments, I am obliged to conclude, that the dying of wool is the most extensive branch of this art, it may be considered as its basis; but the dying of silk, thread, and cotton, deserves also our attention, of which the author shall be silent at present.

The great difference between those substances, and that of wool, is well known to the callico printers, whose grand care it is, to find means of making linen receive the same dyes as wool does. The physical cause of the difference seems yet unknown; and indeed, as before observed of dyes in general, we know as yet very little. Are animal filiments tubular, and the colouring atoms received within them?

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Are vegetable filiments solid, and the colour deposited on the surface? Or, does not their different susceptibility of colour depend rather on the different intrinsic properties of the two? I should be glad to receive an answer to this, with the Author's name.

I should be happy to find some artist undertake to improve what I have in a poor way begun. I long to see the art in perfection, one half of which is yet in oblivion.

The reader may be assured, that what is here recited, is purely the result of the author's own experience (not theory) and part of the effects of many years study.



T H E   E N D .

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The MONTHLY REVIEW for August, 1779,  
gives the following Character of the DYER's  
ASSISTANT:

" This appears to be a useful compilement, on a  
" subject concerning which very few books have ap-  
" peared in this country. The art of dying is, in  
" itself, one of the most curious; and in a commer-  
" cial view, one of the most important. In a word,  
" it is an art, in the improvement and perfection of  
" which, the philosopher and the mechanic are  
" equally interested."

The CRITICAL REVIEW for September, 1779,  
says,

" This treatise is chiefly extracted from several  
" chemical works that are held in esteem, and con-  
" tains likewise some experiments made by the au-  
" thor of the compilation. It teaches the dyer's  
" art in a scientific manner, and must prove useful  
" to those who would cultivate it upon rational  
" principles."